

ABSTRACT

A method of testing thin film adhesion includes placing the film at the focus of a cavitation-producing sound beam. Time required to achieve spot erosion provide a measure of adhesion strength. No erosion occurs when insonification pressure amplitude remains below a threshold value. At pressures above a threshold value, cavitation intensity increases with pressure and erosion time decreases. A plot of erosion time versus pressure amplitude reveals a decreasing time versus insonification pressure. The intercept of the plot with the pressure axis corresponds to the instantaneous erosion of the thin film, and thus the adhesion strength. Further, the threshold value of the pressure at which no erosion occurs indicates infinite life of the thin film under cyclic loading and thus corresponds to the endurance limit, i.e., the fatigue strength, of the thin film. A corresponding apparatus is also disclosed.